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Original Article

Patient outcomes in the field of nursing: A concept analysis

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ABSTRACT

Purpose: This paper reports an analysis of the concept of patient outcomes.
Methods: The Walker and Avant concept analysis approach was applied.
Results: The attributes of patient outcomes include (1) patient functional status (maintained or improved), (2) patient safety (protected or unharmed), and (3) patient satisfaction (patient reporting of comfort and contentment). These attributes are influenced by the antecedents of individual patient characteristics and health problems, the structure of healthcare organizations and received health interventions. Additionally, patient outcomes do significantly impact the quality of nursing care, the cost of effective care and healthcare policy making formulation.
Conclusion: Providing good nursing care to all patients is a central goal of nursing. Patient outcomes in nursing are primarily about the results for the patient receiving nursing care. This analysis provides nurses with a new perspective by helping them to understand all the components within the concept of patient outcomes.

1. Introduction

Patient outcomes are the central measures used in learning about the effectiveness of cost-sensitive, quality health care [1]. A number of private and government healthcare organizations such as the Joint Commission of Accreditation on Healthcare Organization of the USA and the Canadian Council on Health Services Accreditation have been established to evaluate and ensure the quality of health care. Additionally, outcomes have been used to provide a quantitative basis for making clinical decisions, to measure the effect of care on patients, to measure the efficacy of care and to determine areas for care improvement [2]. Despite the importance of the patient outcomes concept, there has not been enough focus on all aspects of this complex concept in the nursing discipline. Furthermore, different researchers have provided different definitions. The purpose of our concept analysis is to

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clarify and describe the multifaceted nature of patient outcomes within the field of nursing.

The term 'patient outcomes' is used frequently in healthcare research [3–6]. For example, the measures of patient outcomes used by Aiken et al. include failure-to-rescue rates and 30-day mortality [3]. Suhonen et al. used health-related quality of life, patient autonomy and patient satisfaction [4]. Shuldham et al. measured patient falls, upper gastrointestinal bleeding, pneumonia, sepsis, shock, pressure sores and deep vein thrombosis [5]. Mallidou et al. used quality of care and adverse patient events (medication errors, patient falls, and nosocomial infections) to measure patient outcomes [6]. Like much of the research into patient outcomes, most of these studies define patient outcomes through measurement and use definitions that are related to the specific aims of the study. However, there is no standard conceptual definition of patient outcomes within nursing.

Concept analysis identifies unique characteristics of each concept and provides researchers with a precise operational definition of that concept. In addition, concept analysis can refine ambiguous concepts within a theory. It can then provide a more basic and deeper understanding of the underlying attributes of that concept [7]. In this paper, to examine nursing-related patient-outcome concepts, we used the eight-step-process of (1) select a concept, (2) determine the purpose of the analysis, (3) identify all uses of the concept, (4) determine the defining attributes, (5) construct a model case, (6) identify antecedents, (7) identify consequences, and (8) define empirical referents [7].

2. Definitions of patient outcomes

2.1. *Dictionary definitions of patient outcomes*

'Patient outcomes' does not appear in dictionaries as one term. However, 'patient' and 'outcomes' can be found separately.

First, according to the Merrican-Webster's Advanced Learner's English Dictionary, a patient is 'a person who received medical care or treatment' [8]. The DK Oxford illustrated English-Chinese Dictionary defines a patient as 'a person receiving or registered to receive medical treatment' [9]. The Longman Dictionary of Contemporary English defines a patient as 'someone who is receiving medical treatment from a doctor or in a hospital' [10].

Second, according to the Merrican-Webster's Advanced Learner's English Dictionary, an outcome is 'something that happens as a result of an activity or process' [8]. According to the DK Oxford American Illustrated English-Chinese Dictionary, an outcome is 'a result; a visible result' [9]. The Longman Dictionary of Contemporary English defines outcome as 'the final result of a meeting, discussion, war etc – used especially when no one knows what it will be until it actually happens' [10]. The Cambridge International Dictionary of English with Chinese translation defines outcome as 'a result or effect of an action, situation, etc' [11].

2.2. *Literature definitions of patient outcomes*

Apart from dictionary definitions, both of the terms 'outcomes' and 'patient outcomes' also appear in the medical literature. Lang and Marek defined outcomes in terms as simple as 'the end results', or similarly as 'the results from some action or event' [12]. Duffy and Hoskinsas defined outcomes as the consequences of the provision of health care [13]. In Donabedian's quality of care mode, outcomes are referred to as the result of the care given [14]. Harris defined outcomes as the end points of care, substantial changes in the health condition of a patient, and changes in patient behavior caused by medical interventions [15]. Given these definitions, outcomes related to clinical practice could be defined as any change that resulted from health care. The term 'patient outcomes' is used by physicians, nurses, and other healthcare professionals. Each profession defines patient outcomes and has developed outcome measures that focus on the standards, activities, and impact of its discipline.

2.2.1. *Patient outcomes in medicine*

The systematic use of 'patient outcomes' to evaluate health care began in the period of the Crimean War, when Florence Nightingale recorded and examined conditions of care for military patients and looked at how those conditions affected patients [16]. From that time, analysis of patient outcomes has occurred periodically, usually centered on different disciplines and often targeting medical treatment [17]. Initially, patient outcomes were treated as 'clinical end points (symptoms and signs, laboratory values, death), functional status (physical, mental, social role), general well-being (health perceptions, energy, fatigue, pain, life satisfaction), or satisfaction with care (access, convenience, financial coverage, quality, general)' [18]. Donabedian defined patient outcomes as changes in the present and future health conditions of a patient that could be linked to previously provided health care [19] while Lohr expanded the concept of patient outcomes beyond the traditional 'five Ds' (death, disability, dissatisfaction, disease, and discomfort) [20]. Patient outcomes in medicine can be seen as a complex construct that can be measured directly and indirectly over different periods of time and can include factors related to functional status, quality of life and health.

2.2.2. *Patient outcomes in nursing*

From the mid-1960s, patient outcomes were used to evaluate nursing care quality. 'Outcomes that are sensitive to nursing are those that are relevant, based on nursing scope and domain of practice and for which there is empirical evidence linking nursing inputs and interventions to outcomes' [21]. McCormick stated that patient outcomes identified as salient for nursing were normal fluid hydration, mobility, and absence of decubitus ulcer and injury to the mucosal membrane [22]. A framework generated by Gillette and Jenko suggested that the measurement of patient outcomes should include patient or family education, facilitation of self-care, symptom distress management, patient safety, and patient satisfaction [23]. Brooten and Naylor listed patient outcomes as 'functional status, mental status, stress level, satisfaction with care, caregiver burden, and cost of care' [24]. According to the American Nurses Association (ANA), nursing variables that contribute to patient outcomes are the presence or absence of pressure ulcers, nosocomial infections, and patient falls in addition to patient satisfaction with nursing care, pain management, educational information, and overall care [25].

Further, Bruggen and Groen defined patient outcomes as measurable or observed results in response to nursing interventions, recorded at specific times during or after care, indicating maintenance or stabilization of health status for clients or consumers [26].

Based on the work listed above, we suggest that a definition of patient outcomes within the nursing discipline should use the groupings of patient functional status (including, health status, well-being and self-care abilities), patient safety (including medical error, patient falls, pressure ulcers, 30-day mortality, and nosocomial infections) and patient satisfaction with nursing care, pain management, and educational information.

3. Attributes or characteristics of patient outcomes

Walker and Avant defined attributes as those characteristics that appear in a concept repeatedly and help researchers differentiate the occurrence of a specific phenomenon from a similar one [7].

Our literature review helped us identify the characteristics of patient outcomes affected by nursing care. Those characteristics can be summarized into the three key defining attributes of patient outcomes of patient functional status (maintained or improved), patient safety (maintained or unharmed), and patient satisfaction (patient reporting of pleasure or contentment).

3.1. *Patient functional status (maintained or improved)*

Leidy defined functional status as an individual's ability to perform the daily life activities required to satisfy basic needs, fulfill usual needs, and maintain health and well-being [27]. Similarity, Knight defined functional status as 'the actual performance of an activity and the level or degree of performance' [28]. Keith noted that measures of functional status have been developed to ascertain disability levels by measuring performance and that these performance measures are now also central to quantifying patient outcomes [29]. Similarly Kaplan stated that functional outcomes are measures of how well patients can do the tasks required for everyday life [30].

3.2. *Patient safety (maintained or unharmed)*

Patient safety was described by the Institute of Medicine as the avoidance of injuries or damage to patients from care or treatment provided to heal them [31]. Simpson defined patient safety as 'the absence of patient harm due to the process of care' [32]. The Agency for Healthcare Research and Quality defined patient safety as 'freedom from accidental injury' [33]. Given these definitions, we define patient safety as avoiding the harm patients may receive caused by the care received from nurses in a healthcare setting. Rivard et al. stated that 'patient safety data typically identify medical errors, near misses, or adverse events' [34]. Additionally, decubitus ulcer [35], and patient falls [36] were unit-level indicators used to measure patient safety. Thirty-day mortality [3] and nosocomial infections [6] were also considered as patient safety indicators.

3.3. *Patient satisfaction (patient reporting of pleasure and contentment)*

Seago et al. have stated that individual perception of pleasure or contentment can be described as patient perceptions of how well pain was managed in the unit, patient perceptions of how well they were taught about what to expect and patient perceptions of how well staff responded to requests for help [37]. We describe these types of patient perceptions as patient satisfaction with pain management, patient satisfaction with education information and patient satisfaction with nursing care.

According to the ANA, patient satisfaction with pain management refers to 'patient opinion of how well nursing staff managed patient pain as determined by scaled responses to a uniform series of questions designed to elicit patient views regarding specific aspects of pain management' [18]. Additionally, patient satisfaction with education information refers to 'patient opinion of nursing staff efforts to educate them regarding their condition and care requirements as determined by scaled responses to a uniform series of questions designed to elicit patient views regarding specific aspects of patient education activities' [18]. Furthermore, patient satisfaction with nursing care was defined as the 'patient opinion of the care received from nursing staff during the hospital stay as determined by scaled responses to uniform series of questions designed to elicit patient views regarding satisfaction with key elements of nursing care services' [18].

Based on our concept analysis of the literature, we define 'patient outcomes' more simply as the results of the nursing care that patients receive in hospital including maintenance of patient functional status, maintenance of patient safety, and patient satisfaction.

4. Cases description and analysis for patient outcomes

Walker and Avant [7] have described a model case that demonstrates 'all defining attributes of the concept'. The example of this case are provided below.

A 56-year-old married male who had a fifteen year history of diabetes and a five year history of hypertension was admitted to the cardiology department. Two days before admission, because of fatigue, the patient began to feel paroxysmal pain at the precordial region, which then spread to his left shoulder. The pain lasted for 5–10 min. Sublingually administered nitroglycerin tablets remitted the pain. The patient's blood pressure had historically been fluctuating between 150/100 and 180/130 mmHg as a result of inconsistent use of a hypotensor medication.

Vital signs at admission were T: 36.4 °C, P: 90 beats/min, R: 20 breaths/min, and Bp: 150/100 mmHg. The patient was conscious and lucid and had no jugular vein distension. Breath sounds were clear and the abdomen was soft. There was no blood vessel noise in the abdomen or kidney region

and no edema in the lower limbs. Lab exam results showed that both cholesterol and triglycerides were elevated. Chest X-rays revealed no anomalies in the heart or lungs. The electrocardiogram revealed a sinus rhythm and myocardial ischemia.

According to the above symptoms, the patient was diagnosed with fatigue angina. As treatment, 10 mg of oral isosorbide dinitrate tid, 30 mg of oral diltiazem tid and 80 mg of aspirin qd were prescribed. The patient also required bed rest. Nitroglycerin was given intravenously. Concurrently, his diabetes, hypertension and hyperlipidemia were managed with oral medicine.

In addition, nurses executed several procedures to help the patient recover promptly: (1) they kept the ward quiet so that the patient could rest well to reduce fatigue, (2) they used a massage mat to prevent decubitus ulcers, (3) they used a bedrail to prevent falls, (4) they controlled the patient's diet and monitored his blood glucose level, (5) they kept a watch on patient blood pressure, measuring it frequently and carefully and (6) they observed the changes in electro-cardiogram results, paying special attention to the changes in the ST range when chest pains were present.

After two weeks of treatment and nursing care, the patient was discharged. Before his discharge, nurses evaluated health status, well-being and self-care abilities. He was given a passing grade on all of these tests. After discharge, nurses then reviewed the patient's satisfaction questionnaire. They found that the patient was satisfied with nursing care, pain management, and educational information. The patient did not suffer from decubitus ulcers, patient falls, medical errors or infections during his hospitalization.

This model case illustrates the successful achievement of all attributes of the patient outcomes concept. First, nurses were able to evaluate the patient's health status, well-being and ability to perform self-care. Thus, 'patient functional status' was maintained or improved. Second, the patient satisfaction questionnaire was returned with all responses marked as satisfied. Thus, 'patient satisfaction' was achieved. Finally, there were no decubitus ulcers, patient falls, medical errors, or infections during the patient hospitalization. Therefore, 'patient safety' was maintained.

5. Antecedents of patient outcomes

'Antecedents are those events or incidents that must occur prior to the occurrence of the concept' [7]. Here we examine some of the antecedents of patient outcomes.

Marek listed the antecedent factors of patient social background, characteristics of the medical system, of the healthcare provider, and of the process of care [38]. Marek also noted that it is necessary to assess outcome measures in equivalent populations and equivalent healthcare settings. Similarly, Johnson and Maas suggested that the antecedents that influence achievement of outcomes include patient factors (such as age, gender, patient condition, and degree of illness or injury), provider factors (such as type of provider, technological level, and discipline standards) and system factors (such as location, human resources, organizational structures and financial structures) [39].

In addition, Bruggen and Groen proposed that both quality assurance and nursing process affect patient outcomes significantly [26]. The factors from quality assurance include things that influence patient outcomes including structural factors such as material resources, human resources and organizational characteristics. Nursing process factors include treatment, diagnosis, rehabilitation, prevention, and patient education.

In summary, the antecedents that affect patient outcomes consist of individual patient characteristics and health problems, the structure of healthcare organizations and received health interventions.

6. Consequences of patient outcomes

Walker and Avant have defined consequences as 'those events or incidents that occur as a result of the occurrence of the concept' [7]. Here we examine three types of consequences of patient outcomes.

First, Sousa suggested that outcomes are central to learning about the efficacy of cost-sensitive care [1]. The impact of patient outcomes on the cost of care has become better understood by all healthcare professionals.

Second, Bruggen and Groen noted that the results of outcome measurement are the key to assessing quality of care [26].

Third, outcomes are also essential to diverse stakeholders [40]; clinicians, other medical professional team members, purchasers, government bureaucrats and pharmaceutical businesses. Clinicians need patient outcome information to help them treat individual patients and to improve their practice of medicine. Other medical professional team members may want to determine their own performance and understand how they contribute to total care on an individual level. Additionally, hospital rules or medical laws may require them to produce this information for assessment of how well they satisfy accountability standards or for assessment of their performance. Purchasers want to access patient outcome information to decide what to buy and how much to spend and may prefer outcome information to information from diagnostic related groups to help them build a case mix concept. Government bureaucrats use patient outcome data to measure progress with government public health goals. Pharmaceutical businesses demand data on patient outcomes to understand the effectiveness of the medications they sell, to get new business and to extend the life of their current product mix.

In brief, the consequences of better patient outcome information include more cost effective care, improved quality of care and refined heath care policy making formulation.

7. Empirical referents of patient outcomes

'Empirical referents are classes or categories of actual phenomena that by their existence or presence demonstrate the occurrence of the concept itself' [7]. The defining attributes of the patient outcomes concept are abstract, so we need empirical referents to make the concept measurable. Here, empirical referents for 'patient outcomes' will be described from within our definition of patient outcomes in terms of patient functional

status (maintained or improved), patient safety (maintained or unharmed) and patient satisfaction (patient reporting of pleasure or contentment). We examine these referents in detail.

7.1. *Patient functional status (maintained or improved)*

The empirical referents used to measure patient functional status include items such as "Can you take care of yourself, that is, eating, dressing, bathing, or using the toilet?" and "Can you participate in moderate recreational activities like golf, bowling, dancing, doubles tennis, or throwing a baseball or football?" [41].

7.2. *Patient safety (maintained or unharmed)*

The empirical referents for patient safety include patient falls, the occurrence of decubitus ulcers, the recording of medical error, 30-day mortality, and nosocomial infections.

Measures of patient falls include locations where falls happened (i.e., in the room, the hallway, the bathroom, garden, food court, etc.), the actions the patient was performing when the fall happened (i.e., using the toilet, showering or getting dressed, getting in or out of bed, walking, sleeping, etc.), fall-related injury (i.e. no injury, minor or major with description of injury) and nursing interventions after a patient fall (comfort and support of the patient, immediate provision of injury care, patient fall prevention training).

Measurement of decubitus ulcer severity is described with five stages: 'Stage 0: no clinical evidence of a pressure sore; Stage 1: discoloration of intact skin; Stage 2: partial-thickness skin loss or damage involving epidermis and/or dermis; Stage 3: full-thickness skin loss involving damage or necrosis of subcutaneous tissue but not extending to underlying bone, tendon or joint capsule and Stage 4: full-thickness skin loss with extensive destruction and tissue necrosis extending to underlying bone, tendon or joint capsule' [42].

Medical errors and nosocomial infections were recorded by nurses who reported on the frequency of negative events within the preceding year. They rated the occurrences of patients receiving the wrong medication or dose and nosocomial infections [43] on a 4-point scale ranging from "never" to "frequently".

30-day mortality was measured from death records (which identify patient death within 30 days of admission [44]).

7.3. *Patient satisfaction (patient reporting of pleasure or contentment)*

Empirical referents for patient satisfaction include items such as nurses made sure that patients had privacy when required, nurses knew what to do for the best of each patient, nurses thought ahead about patient needs, nurses helped patients feel at ease in the hospital and nurses helped patients manage fears about their illness.

8. Conclusion

Through our analysis, we see that the concept of patient outcomes is made up of several essential components and influenced by various factors that medical staff, nurses, and nurse managers need to be aware of and monitor. We have defined patient outcomes in terms of the attributes of nursing care patients' experience in hospital, including maintenance of patient functional status, maintenance of patient safety, and patient perception of satisfaction. The analysis in this paper can give nurses a more fundamental perspective, one that focuses on the component parts of the patient outcomes concept. The benefits of improving patient outcomes should encourage health policy makers to improve organizational structures and to promote effective nursing intervention and training programs.

However, our analysis of the essential characteristics of patient outcomes was restricted to variables measurable only between patient admission and discharge and only include patient outcomes that occur in an acute care setting where nurses are able to supervise hospitalization. Thus, patient outcomes that depend on long term or out-patient care were not included in the analysis.

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